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ABSTRACT

Selecting appropriate teaching strategies to optimize learning of a particular body of knowledge presents a challenge to adult educators. There has been little emphasis, however, on the role that subject matter plays in the learning process. From a literature review, a model that relates teaching methods to subject matter and learner dependence can be constructed. Elements of the model include the following: subject matter, prior knowledge, pedagogical theory and practice, subject matter classification along a continuum related to student dependence-independence, and use of a variety of learning strategies related to the subject matter and the dependence or independence of the student. (15 references) (KC)

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Running head: SUBJECT MATTER AND ADULT LEARNING

The Role of Subject Matter in Adult Learning

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Abstract

Selecting appropriate teaching strategies to optimize learning of a particular body of knowledge presents a challenge to adult educators. Although understanding learner needs and the learning process itself is helpful to adult educators (the focus of many learning theories), there has been little emphasis on the role that subject matter plays in the learning process. This is unfortunate since, presumably, many adult learners participate in programs to gain knowledge on specific subjects. In addition, learners have diverse experience levels (dependence) in subject areas. This literature review presents a model that relates teaching methods to subject matter and learner dependence.

The Role of Subject Matter in Selecting Teaching Methods

Introduction

The "back to basics" movement for schools has been in the forefront of political debates for many years. For many learning institutions, this has meant a return to subject-centered (pedagogical) as opposed to learner-centered or problem-centered teaching methods (andragogical). This subject-centered, fundamentalist approach assumes that learning subject matter is a central purpose of schooling. Although elementary and secondary schools are at the forefront of this debate, post secondary schools, including colleges, universities, technical and vocational schools have taught "subjects" for many years. Interestingly, these same institutions also teach adult educators to use far less pedagogical principles although they, themselves, often practice this subject-centered approach.

The adult education student; therefore, is in a quandary as to the principles of applying teaching methods given a specific subject matter. A. Knox in his 1986 book, Helping adults learn: A guide to planning implementing and conducting programs, states "most instructors in adult education programs are expert in the content they teach, but they usually have little preparation in the process of helping adults learn." (p. xi.) While adult educators seek to fill this gap, they often lack the ability to choose appropriate methods and techniques that compliment the subject matter.

Adult learners participate in academic, job-related, or continuing education programs as an act of self-improvement to enrich their opportunities. By taking courses, these adults expect to gain new knowledge or learn new skills. In either case, teachers attempt to facilitate learning using a variety of methods which, presumably, add to the students knowledge. It is in the choice of teaching methods that the difficulties lie. The subject matter, or knowledge base, becomes the focus of the coursework.

Selecting the appropriate methods to optimize learning of a particular body of knowledge presents a challenge to adult educators.

While selecting appropriate methods depends on the subject being taught, the learner's level of dependence plays an equally important role. Dependency refers to the cognitive characteristics of the adult learner; i.e., the nature and extent of his knowledge base in relation to the subject matter being taught. This literature review will explore the relationship between subject matter and level of learner dependence and will suggest a model for selecting appropriate teaching methods and techniques.

Background

The numbers of theories of adult learning have increased substantially since the early 1900's. Most have focused on the learning process as well as the psychological and social implications of learning. Many of these theories emphasize the teachers' and learners' roles in the learning process but fail to produce any significant relationship between these and a critical element in the learning transaction – the subject matter or knowledge. In fact, theories of andragogical methods focus increasingly on the learners' needs and on the learning process itself, but away from the role of subject matter. Admittedly, focusing on the learner is a righteous cause. He is the customer in the learning transaction. Likewise, concentrating on the learning process adds depth to the field of adult education and helps us understand the best ways to facilitate learning. However, in the vast majority of learning transactions, it is the subject matter that has lured the learner in the first place.

Acknowledging learner needs and incorporating wisdom about the learning process while, at the same time, accommodating the elements of subject matter has long been a troublesome task for adult educators. In 1929, Mildred Wiese, a curriculum specialist, and G.L. Maxwell, an educational program director for the Works Progress Administration concluded:

> Teachers want help in planning courses and units of study in setting up definite objectives consistent with the needs of their students; in keeping their courses flexible and adapted to the developing interests of their students. They want to know how to bring the experiences of their students' daily lives into the framework of a course of study; how to take advantage of spontaneous and unpredictable educational opportunities; how to cut across "subjects" in dealing with the ways of thinking and of acting that are characteristic of everyday adult life (Weise & Maxwell, 1939, p 174).

Apparently little has changed since 1939, in terms of teachers' need for help in planning programs. While the depth of knowledge about the adult learner and the learning process is increasing, those "in the trenches" continue to experiment, explore, and puzzle over the validity of specific teaching methods in the context of the learning transaction.

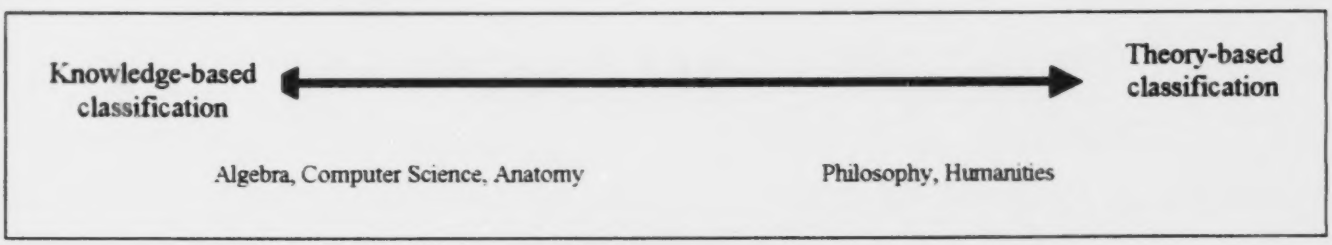
Subject Matter

Because learners often participate in adult learning situations to gain knowledge in a particular subject matter, the essence and taxonomies of subject matter are relevant to this discussion. Granted, knowledge in subject matter is generally a means to an end and not an end itself. Regardless of the learner's purpose, he has a need to know bodies of knowledge, or subject matter. To this end, the subject matter contained within a specific course is likely driven by the governing institution and is generally not negotiable. For instance, consumers of a course titled "Introduction to Computers" would expect gain some level of expertise in computer terminology, background, applications, and the like. Accordingly, the teacher is responsible for program development that includes objectives such as: demonstrate understanding of basic history of the computer and demonstrate understanding of key computer terminology. We can surmise that course titles drives course content and that elements of

course content result in program objectives. Such objectives are inclined to particular teaching methods; therefore, the course content and its subsequent subject matter is important to course development and teaching methods.

Subjects have taxonomies and natural divisions that predispose them for assimilation by the learner. For the purposes of this paper, all subject matter will fall within one of two general realms; knowledge-based or theory-based. Knowledge-based subjects are generally scientific, analytical and factual information that serves as a foundation for some broader body of knowledge. Theory-based subject matter is "soft," controversial and is subject to discussion and exploration.

Consider the diagram below:



Continuum of subject matter 1

Rarely is subject matter wholly within a single classification. Instead, either subdivisions or increments of subjects tend toward a knowledge-based or theory-based classification. For example, an Introduction to Computers course has distinctly knowledge-based subcategories such as history and terminology. In addition, the course could also include theory-based or philosophical subcategories such as e-mail etiquette and internet ethics (e.g., sending viruses). Likewise, increments of a subject progress from knowledge-based to theory based classification. For example, a Literature course may begin with presentations of objective, factual information such as definitions of story elements then progress to more theoretical material such as analysis of story elements. In the case of the literature

course, the course material progresses from fact based to philosophical while the student matures in his grasp of the material.

Decomposing subject matter into classifications can allow teacher insight into applying teaching methods. Hilgard (1966) believes the organization of knowledge should be a principal concern of teachers and that such organization should proceed from simplified wholes to more complex wholes. These simplified wholes can correlate to the early, entry-level knowledge that is essential if students are able to increase their depth of knowledge of a subject. Complex wholes are the knowledge that sits on the perimeter of the subject. These areas are more conducive to teaching methods that employ analysis and interpretive techniques.

Subject matter organization is often driven by the organization of the textbook used in the coursework. This is not necessarily invalid. Presumably, textbook authors are the subject matter experts and are able to decompose subject matter into logical and meaningful subdivisions (taxonomies of concepts). If the subject matter is properly organized within a text, the teacher can use the organization as a framework for selecting specific teaching strategies. If this is not the case, then the teacher has the additional responsibility of reorganizing or reordering the presentation of material in the most meaningful way possible. This can be a time consuming task. Teachers can use the technique of webbing to help them. Webbing is a popular technique for creating subject-matter taxonomies (Zuga, 1988

The Value of Prior Knowledge

All learners must have a basic understanding of subject matter, including knowledge of its terminology, before they can perform higher level thinking skills such as; analysis, discussion, problem solving and design in relation to the subject matter. Stephen Brookfield, in his book

"The Skillful Teacher," summarizes this well. He believes that adult educators love to have students think critically about the subject matter. That ability, however, assumes a basic vocabulary -- a vocabulary they don't necessarily have coming in. In other words, "You can't think critically about nothing."

B.F. Skinner adds to this when he says:

> It is dangerous to suggest to the student that it is beneath his dignity to learn what others already know, that there is something ignoble (and even destructive of "rational powers") in memorizing facts, codes, formulae or passages from literary works. And that to be admired he must think in original ways. It is equally dangerous to forego teaching important facts and principles in order to give the student a chance to discover them for himself. (Skinner, 1968, p.110)

Establishing a knowledge base, including a vocabulary base, prepares students for higher level learning strategies like problem solving and self-directed learning techniques. Glaser (1993) believes that inadequacies in a student's knowledge base contribute to problem solving difficulties.

Additionally, sufficient background knowledge is necessary if students are to use non-traditional learning methods, such as self-directed learning techniques or learning contracts. Basic subject-based constructs must be established before the student can begin his exploration. A washing machine repairperson must know the fundamentals of how washing machines work before he can determine what is not working, and more importantly, why. Likewise, the student must know the elements of a subject area (ie: what is important and what is incidental) before he can begin exploration. It is the teacher's responsibility to adequately prepare students for this self-directing role

by helping them reach a fundamental understanding of the subject matter. Certainly, it is through proper selection and application of teaching methods that good teachers achieve this goal.

From Theory to Practice

Pedagogical theory has become the antithesis of adult learning theory as the drive to andragogical principles increases. Practices that are deemed "teacher-directed" or "knowledge-based," or use "direct instruction" are most certainly not welcomed by contemporary andragogical theorists. The pedagogic tent, it turns out, is not very big at all (Finn, C. & Ravitch, D., 1996). However, in consideration of students acquisition of low level facts or knowledge, these behaviorist or instrumental theories of learning can be relevant, if not practical. We need, therefore, to ensure that a core of knowledge is not only made explicit but also taught in a structured manner. This does not mean that andragogical principles cannot be used in teaching basic knowledge. Albeit acquisition of subject matter knowledge lends itself to pedagogical principles, the creative teacher can apply andragogical principles effectively. In a 1995 study of the effects of collaborative learning versus drill-and-practice on critical thinking skills, A. Gokhale found that "...both methods of instruction were found to be equally effective in gaining factual knowledge." (Paragraph 39) Gaining factual knowledge is independent of teaching method, although some methods simply lend themselves better to either andragogical or pedagogical practices. The teacher is ultimately responsible for selecting instructional methods. The following model (pg. 16) proposes a relationship between types of subject matter and the level of learner dependence. Within this matrix lies classifications of teaching methods. This model assumes a natural correlation between subjects and teaching methods based on the learner's dependence.

Subject Matter Classification

The model proposes a continuum of subject matter along the vertical (y) axis. Objective material is considered knowledge based such as Algebra, history, etc., and is situated at the southern end of the vertical axis. Subjective material is theory based such as philosophy, art, and humanities and sits at the northern end of the vertical axis. Objective material is likely subject to recall-based assessment techniques such as completion, short-answer items, matching items, true-false, other binary-choice items, and multiple-choice items. Subjective material is likely subject to essay items, portfolios, teacher observation, student self-report, and peer rating methods. Subject matter classification (its degree of objectivity) and the student's prior knowledge of it (dependency) are key to interpreting this diagram.

Student Dependence

The horizontal (x) axis depicts the dependency of the adult learner. Dependant learners have little prior knowledge, or experience with, the subject matter. They don't know what they don't know – the constructs and possibilities that lie within a body of knowledge. For example, a newcomer to the field of computer science would be considered a highly dependent learner. They know little or nothing about computers, save for, perhaps, what one looks like. This learner must establish some level of understanding of computers before he can embark on any type of self-directed learning. Highly dependent learners need "hand-holding" before they can feel comfortable in subject matter exploration.

Independent learners have an existing knowledge base on which to amplify their depth of understanding of a particular subject. For example, a computer operator, learning computer science, would have an existing foundation of skills, vocabulary and conceptual understanding of computers.

This foundation means learning principles of computer science would be easier for him than it would be for a novice computer user. Depending on the degree of independence of the learner, among other factors, this learner could probably undertake self-directed learning projects or use learning contracts to facilitate his learning of computer science principles.

Degree of dependency is an important factor in selecting a teaching method. Although learner dependence can stand alone in most learning theories, this model requires the element of a particular subject matter.

Elements in the Learning Transaction

The model contains two progressions according to learner dependency/orientation of subject matter. The first contains 4 groups; each composed of elements of teaching methods. The second gives examples of learning theories and constructs. The arrows represent tendencies in relation to the learner dependency/orientation of subject matter.

The first of the 4 groups suggests an approach to teaching if learner dependency is high and the subject matter is objective. One-way communication would be typical of the information transfer. A common example of a teaching method that uses this strategy is lecture. Lecture, as a teaching method, has received much criticism; however, it is a legitimate method when used appropriately. Used inappropriately, it bores the learner without accomplishing any learning goals. Used appropriately, it is an efficient way to transfers knowledge. In accordance with the model, lecture provides a framework for learning activities and for further study. It identifies, explains, and clarifies difficult concepts, problems or ideas (Farrah, 1990). Lecture can be especially practical for dependent learners experiencing knowledge-bsaed subject matter. One can envision a freshman class of anatomy students studiously taking notes on the constructs of anatomy.

These methods propose a "teach you" and "show you" methodology to enhance the learners knowledge base. The subject is of primary importance. These highly dependent learners will likely be expected to demonstrate mastery in the subject through objective assessment techniques.

As the subject matter becomes more theoretical and the learner matures in it, the learning transaction often incorporates two-way communication techniques. The second group suggests this principle. Dialog between and among teacher and students replaces one-way communication so that problems are discussed and questions invoked. An example of this type of learning transaction can be found in many college classrooms. Teachers may lecture on new material but provide ample opportunity for questions in an open-forum. In questioning, nuances within the subject matter are exposed and, presumably, all students benefit from teacher/student dialog. These methods assume the learner has some foundation in the subject matter on which to base his questioning. The subject matter is subtle enough to facilitate interpretation. These methods are not without problems as questioning and dialog require more time that rote lecture. Additionally, we have all endured seemingly endless dialogs between the teacher and a single student – dialogs which are essentially far tangents from the subject matter being taught. The benefits outweigh the risks, though, if time permits and limits are placed on the forum of the questioning.

The third grouping in the model exemplifies methods used when students are fairly independent and the subject matter is increasingly subjective: for example, college junior and senior education majors learning about theories of learning. These students would have a knowledge base of terminology and theories in educational practices and would be able to practice in the field by student teaching. Such experiential methods are typical of this intersection of student independence and subject matter objectivity. The subject matter is less concrete than in the early courses in education.

It would be appropriate to practice collaborative methods such as joint research projects or discussion of key elements in educational theory. These teaching methods begin to tackle more affective and less cognitive domains. Students are encouraged, if not expected, to "stretch their wings" in an effort to both increase their knowledge base and explore constructs within the subject matter at their own pace. Student learning begins to take on a more self-directed approach. Meanings, relationships, usefulness, appropriateness, associations, and contrasts are the terms used in defining student exercises. Both the subject matter and the assessment methods would be increasingly subjective in nature. Essays and other interpretive "compare and contrast" assessment techniques are common.

Stephen Brookfield (1990) has an interesting opinion on the subject of discussion. He believes that true discussion forums should be highly democratic and not limited by the teachers' ulterior motives; that is, true discussion should be free of the constraints of a specific subject matter or expected outcome. While outcomes should be unmapped, this author believes discussions should, and do, focus on subject matter while permitting concept exploration, problem solving, and attitude change. These facets of learning are quite valid to the adult learner. In fact, subject matter plays, in this author's opinion, a very important role in discussion methods. Gange supports this when he states: "The conduct of discussion is one of the most convenient ways to transfer learned concepts to novel situations. . . . the process is usually initiated however by verbally stated questions of the problem solving variety." (p. 268).

The last grouping in the model emphasizes the use of highly subjective teaching methods given an eminently independent learner and theoretical subject matter. This intersection might occur in masters or doctoral programs where the learner presumably has extensive knowledge of the subject

matter. At these levels, the student's solid foundation in the subject matter empowers them with opportunities to facilitate their own learning. Learning contracts are an excellent method of maximizing student learning. At this level, the student's diverse needs, level of prior knowledge and interests are of great benefit. Although the subject matter remains a key element in the learning transaction, the student can conditionally explore it to target learning in a way most meaningful to him, as an individual.

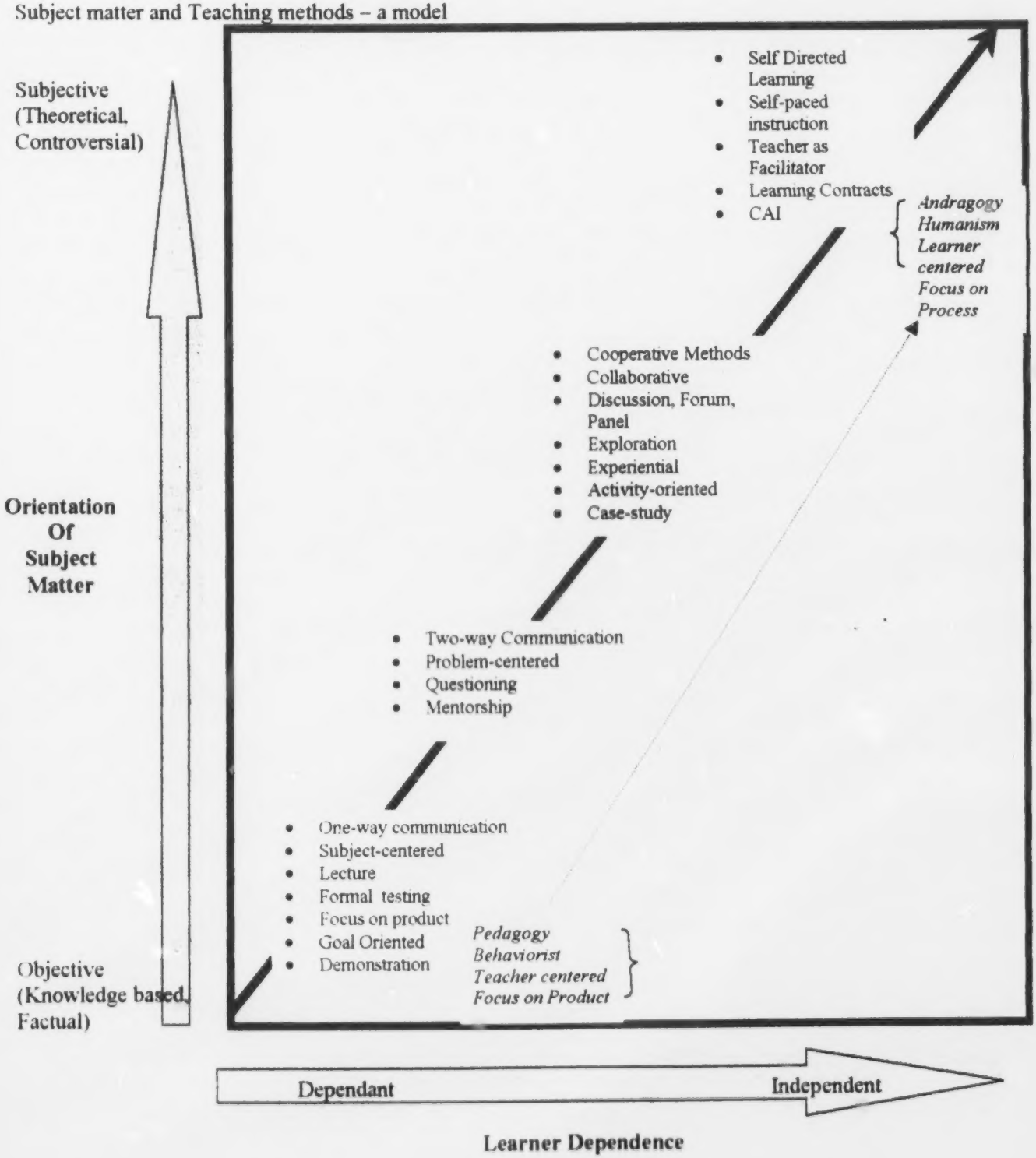
Students also have access to a wide variety of learning strategies. For example, depending on the individual student's strengths and interests, he might choose to perform original research or complete a literature review. Students might also participate in experiential learning methods, such as work-site visits or corporate sponsored projects. In any case, learning contracts offer exemplary opportunities for the mature adult learner. They not only allow students to add depth to their knowledge of subject matter but they provide the additional benefit of encouraging students in learning how to learn. Lindquist (1975) and Knowles (1980) believe that learning contracts help student's develop the habit of lifelong learning. The combination of knowledgeable learners and theory-based subject matter make the use of learning contracts particularly appropriate.

In addition to the 4 groupings of learning techniques, the model proposes a dichotomy of learning theories that progress from pedagogical to andragogical. This progression is in relation to the level of learner dependence (from dependent to independent) and the orientation of subject matter (from objective to subjective). Malcolm Knowles (1973) touches on this concept in his philosophy of andragogical principles. He proposes that as learners become more independent and as they mature in age, andragogical principles should be applied. Likewise, young, dependent learners need the structure of pedagogical principles. Introducing the element of subject matter objectivity into this

theory, pedagogical principles are intuitively more appropriate for highly dependent learners engaging in highly objective subject matter. Conversely, mature, independent learners approaching theoretical subject matter are better served using andragogical principles.

Malcolm may disagree with this interpretation. He seems to leaves little room for application of pedagogical principles in adult education. However, he does concede that dependent adult learners, under certain conditions, need to be taught by the pedagogical model (Knowles, M., 1973). One such condition occurs when adult learners enter into a new, unfamiliar content area. This model adds the element of subject matter classification. It proposes that dependent learners, entering into highly objective subject matter, need to be taught by the pedagogical model. In contrast, as the learner increases his independence and as the subject matter increases in subjectivity, andragogy offers a better opportunity to maximize the adult's learning experience.

Subject matter and Teaching methods – a model



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Conclusion

The fields of education, psychology, and sociology have produced many learning theories. The growth in the field of adult education has enhanced the development of learning theories that focus on the unique attributes of the adult learner. If these theories encompass the idea of learning as change; change in habits, knowledge, or attitudes, then the element of subject matter (a precursor to knowledge) cannot be ignored. This paper combines subject matter orientation and learner dependence as an aid in proposing subsequent learning strategies. Each of us has experienced inappropriate use of teaching methods and knows the impact these methods have had on our own learning. The appropriateness of a particular learning strategy for a given learning transaction is paramount to successful learning.

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